

**WE CLAIM:**

1. Apparatus for performing parallel chemical reactions under pressure in a plurality of reaction vessels, said apparatus comprising a base with first and second sets of reaction vessel receiving recesses into which reaction vessels  
5 are adapted to be received, at least one of said recess sets comprising more than one recess, fluid supply means, fluid manifold means, means operably connecting said fluid supply means and said manifold means, said manifold means comprising first and second valve means independently operably connecting said fluid supply means to each of said reaction vessels received  
10 in each of said first and second sets of reaction vessel receiving recesses, respectively.

2. The apparatus of Claim 1 wherein said base comprises a third set of reaction vessel receiving recesses into which reaction vessels are adapted to be received and wherein said fluid manifold means comprises third valve  
15 means independently operably connecting said fluid supply means to each of said reaction vessels received in said third set of reaction vessel receiving recesses.

3. The apparatus of Claim 2 wherein said base comprises a fourth set of reaction vessel receiving recesses into which reaction vessels are adapted to be received and wherein said fluid manifold comprises fourth valve means  
20 independently operably connecting said fluid supply means with each of said reaction vessels received in said fourth set of reaction vessel receiving recesses.

4. The apparatus of Claim 1 wherein said vessels received in said first and second sets of reaction vessel receiving recesses comprise first and second rows of reaction vessels, respectively.

5. The apparatus of Claim 2 wherein said vessels received in said third set of reaction vessel receiving recesses comprises a third row of reaction vessels.

6. The apparatus of Claim 3 wherein said vessels received in said fourth set of reaction vessel receiving recesses comprises a fourth row of reactions vessels.

10 7. The apparatus of Claim 1 wherein said fluid supply means comprises multiple fluid sources and wherein said connecting means comprises a multiple-way fluid control valve.

8. The apparatus of Claim 7 wherein said multiple-way valve comprises a five- way fluid control valve.

15 9. The apparatus of Claim 1 wherein said manifold means comprises means for separately sealing each of said reaction vessels.

10. The apparatus of Claim 9 wherein said sealing means comprises an o-ring and means for affixing said o-ring to said manifold.

11. The apparatus of Claim 1 wherein said manifold means further  
20 comprises a pressure relief valve.

12. The apparatus of Claim 1 further comprising an explosion proof shield interposed between said base and said manifold means and defining an interior space within which said reaction vessels are situated.

13. The apparatus of Claim 12 further comprising means for connecting said fluid supply means and said interior space of said shield.

14. The apparatus of Claim 1 wherein said manifold means comprises a first manifold portion and a second manifold portion.

5 15. The apparatus of Claim 14 wherein said connecting means is connected to said first manifold portion and wherein said first and second valve means are operably interposed between said first and second manifold portions.

16. The apparatus of Claim 1 wherein first and second valve means  
10 comprise first and second valve stems and wherein said first and said second valve stems have different heights.

17. The apparatus of Claim 1 further comprising temperature sensing means and wherein one of said reaction vessels received in one of said first and second sets of reaction vessel receiving recesses is adapted to receive  
15 said temperature sensing means.

18. Apparatus for performing parallel chemical reactions under pressure in a plurality of reaction vessels, said apparatus comprising a base with an array of reaction vessel receiving recesses into which reaction vessels are adapted to be received, fluid supply means, fluid manifold means comprising an input  
20 manifold, a distribution manifold and valve means interposed between said manifolds, means operably connecting said fluid supply means and said input manifold such that fluid from said supply means passes through said input manifold, said valve means and said distribution manifold, to said reaction vessels.

19. The apparatus of Claim 18 wherein said reaction vessels are divided into two sets and wherein said valve means comprises first and second valves operably connected to said reaction vessels in each of said first and second sets, respectively.

5 20. The apparatus of Claim 18 wherein said connecting means comprises a five-way valve interposed between said fluid supply means and said input manifold.

21. The apparatus of Claim 18 further comprising a pressure relief valve connected to said input manifold.

10 22. The apparatus of Claim 18 wherein said distribution manifold comprises first and second independent distribution channels.

23. The apparatus of Claim 22 wherein said reaction vessels are divided into first and second sets and wherein said first set is connected to said first distribution channel and said second set is connected to said second  
15 distribution channel.

24. The apparatus of Claim 19 wherein each of said reaction vessel sets comprises a row of reaction vessels.

25. The apparatus of Claim 23 wherein each of said reaction vessel sets comprises a row of reaction vessels.

20 26. The apparatus of Claim 18 wherein said manifold means comprises means for separately sealing each of said reaction vessels.

27. The apparatus of Claim 26 wherein said sealing means comprises an o-ring and means for affixing said o-ring to said manifold.

28. The apparatus of Claim 18 further comprising an explosion proof shield interposed between said base and said manifold means and defining an interior space within which said reaction vessels are situated.

29. The apparatus of Claim 28 further comprising means for connecting  
5 said fluid supply means and said interior space of said shield.

30. The apparatus of Claim 18 further comprising temperature sensing means and wherein said temperature sensing means is received within one of said reaction vessels.

31. Apparatus for performing parallel chemical reactions under pressure  
10 in a plurality of reaction vessels, said apparatus comprising a base with first and second rows of reaction vessel receiving recesses into which reaction vessels are adapted to be received, at least one of said rows comprising more than one recess, fluid supply means, fluid manifold means, means operably connecting said fluid supply means and said manifold means, said  
15 manifold means comprising first and second valve means independently operably connecting said fluid supply means to each of said reaction vessels received in each of said first and second rows of reaction vessel receiving recesses, respectively.

32. The apparatus of Claim 31 wherein said base comprises a third row of  
20 reaction vessel receiving recesses into which reaction vessels are adapted to be received and wherein said fluid manifold means comprises third valve means independently operably connecting said fluid supply means to each of said reaction vessels received in said third row of reaction vessel receiving recesses.

33. The apparatus of Claim 32 wherein said base comprises a fourth row of reaction vessel receiving recesses into which reaction vessels are adapted to be received and wherein said fluid manifold comprises fourth valve means independently operably connecting said fluid supply means with each of said  
5 reaction vessels received in said fourth row of reaction vessel receiving recesses.

34. A tool for use in combination with apparatus for performing parallel chemical reactions under pressure in first and second reaction vessels, said apparatus comprising fluid supply means, fluid distribution means operably  
10 connecting said fluid supply means and said first and second reaction vessels, said fluid distribution means comprising a surface, a fluid channel having an internally threaded portion proximate said surface, a nozzle comprising an externally threaded hollow cylindrical portion adapted to be rotatably received within said channel portion and a hollow head portion  
15 comprising a shoulder, an o-ring received around said cylindrical portion, between said surface and said shoulder, when said cylindrical nozzle portion is received within said channel portion and wherein said tool comprises a rotatable handle and means attached to said handle for engaging said head until said nozzle is rotated to a position wherein said shoulder is spaced from  
20 said surface a predetermined distance, such that said o-ring is compressed to the desired degree.

35. The combination of Claim 34 wherein said head comprises a surface with a groove and wherein said head engaging means comprises grooved means for engaging said grooved head surface.

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36. The combination of Claim 34 wherein said handle comprises a hexagonally shaped stem and said head engaging means comprises a hexagonally shaped opening adapted to receive said stem.

37. The combination of Claim 34 wherein said head engaging means  
5 comprises a height regulator.

38. The combination of Claim 35 wherein said head comprises a conical section upon which said grooved surface is situated, said grooved surface tapering inwardly from said shoulder towards the end of said head.

39. The combination of Claim 35 wherein head engaging means  
10 comprises a hollow, generally cylindrical part adapted to receive said head, said part comprising an internally grooved surface.

40. Apparatus for performing parallel chemical reactions under pressure in a plurality of reaction vessels containing a liquid reaction mixture, for use in combination with magnetic stirrer means, said apparatus comprising a base  
15 with a vessel receiving recesses into which reaction vessels of a given diameter are adapted to be received, fluid supply means, fluid manifold means for operably connecting said fluid supply means with the reaction vessels, a stir bar situated in one of said reaction vessels, said stir bar being longer than said given reaction vessel diameter, such that it extends through  
20 the surface of said liquid reaction mixture.

41. The combination of Claim 40, wherein said stir bar is situated at an angle relative to the bottom of the reaction vessel.